

## REVIEW

**“A MONOGRAPH OF THE FERN GENUS BOLBITIS (LOMARIOPSIDACEAE)”**, by E. Hennipman, Leiden Botanical Series 2: xii + 331 pp., 12 pl., 87 fig. 1977. Leiden University Press. ISBN 90-6021-405-6. \$38.50/Dfl. 92.—This is an impressive and intricate work, unquestionably the most complete monograph that exists for any pantropical fern genus. Hennipman recognizes 44 species (a reduction from the 97 of Copeland) and 13 hybrids. He divides *Bolbitis* into ten series, based primarily on venation, spore morphology, rhizome anatomy, and rhizome scales. One of these series (*Egenolfianae*) comprises the species often included in the segregate genus *Egenolfia*, but Hennipman offers convincing reasons for treating it as a part of *Bolbitis*. Further, he suggests that the free-veined series *Egenolfianae* may represent a derived condition in a genus that is usually characterized by anastomosing and reticulate venation. Generally, the series seem well characterized; however, no key is provided and only 34 of 44 species are placed in this scheme, so that it is a little difficult to understand series limits. Hennipman postulates that several of the ten unplaced species may have arisen through hybridization between species of different series. One American species (*B. bernoullii*) is postulated to have arisen through hybridization between *B. lindigii* and a species of another genus, possibly *Polybotrya*, a suggestion that cries out for experimental verification. If Hennipman is right, hybridization has been extremely important in the evolution of *Bolbitis* and, by extrapolation, in tropical ferns in general.

The taxonomic account includes keys (separate keys for American, African, and Asian-Pacific *Bolbitis*), descriptions, synonymy, distribution maps, and excellent illustrations. There is a thorough introductory account of such topics as morphology and anatomy, karyology, habitat, juvenile leaf characters, intra- and inter-generic relationships, and biogeography. One of the most difficult aspects in dealing with *Bolbitis* is the great variation in leaf morphology within species, many of which show a succession of leaf forms (heteroblastic series). Certain precociously fertile juvenile forms had previously been treated as distinct species, but Hennipman, through the study of herbarium specimens and living plants, has convincingly shown their identity with more developed forms.

Several unusual or novel features of the taxonomic treatment are exemplary. There is an abbreviated list of specimen citations: where species are common Hennipman gives the number of collections seen in a given political unit; where uncommon or rare, collector, number, and herbarium acronym are cited. To compliment this list, there is a complete index of collections organized alphabetically by collector. Following the description of each species, there are extensive notes on habitat, elevation, relationships, variability, aberrant specimens, typification, and spore morphology. The last-named character is given more complete coverage than in any fern monograph I have seen, tropical or temperate.

One possible source of confusion is the treatment of certain “taxa” as hybrids and others as species of hybrid origin. Hennipman attributes abnormal spores or aborted spore mother cells to most of the hybrids. However, *Bolbitis* × *lancea*, *B.*

× *prolifera*, and *B. × sinuosa* nm. *foxii* are all described as having “normally shaped spores.” It is also a little disconcerting, even frightening, that most of the 44 species described by Hennisman have some specimens (even a majority, e.g., in *B. pergamentacea*) that show abnormal spores. Curiously, there are many more inter-series hybrids (13) than intra-series hybrids (3).

If the quality of this monograph is to be approached for other fern genera, there is plenty for all pteridologists to do for the foreseeable future.—*Alan R. Smith, University Herbarium, Department of Botany, University of California, Berkeley, CA 94720.*

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